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Ms. Magalie Roman Salas  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W., TW-A325  
Washington, DC 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Re: In the Matter of Applications for Consent to the Transfer of  
Control of Licenses and Section 214 Authorizations from  
Ameritech Corporation, Transferor, to SBC Communications,  
Inc., Transferee: CC Docket No. 98-141, ASD File No. 99-49

Dear Secretary Salas:

Please be advised that on August 2, Stephen Harsanyi, Larry Roscoe, Edward Morrell, Kriss Replogle, Sanjay Vidyarthi, William Pugh and myself met with Anthony Dale (CCB), Shanti Gupta (OET), Jerry Stanshine (OET), Katherine Farroba (CCB), and Johanna Mikes (CCB) to discuss matters of record in the above-referenced proceeding. During the discussion, the attached information regarding Lucent's 82-type cabinets was referenced.

If you have any additional questions, please don't hesitate to contact me at (202) 530-7019.

Sincerely,

Susan E. McNeil  
Director, Global Public Affairs  
Lucent Technologies

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# Cabinet Description

# 1

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# Cabinet Description

# 1

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## Introduction

The 82-type remote terminal cabinet family includes the 82A, 82D, and 82G cabinets. The cabinets are an extension of the central office allowing telephony to be served efficiently to remote business and residential communities. These cabinets house telephony equipment along with batteries to supply backup power.

This section describes the 82-type cabinets including their design and environmental control features that are used to keep the equipment within their operating temperature limits.

## Cabinet Design

The 82-type cabinets are designed to house digital loop carrier systems, including various combinations of the following:

- Lucent **SLC**<sup>®</sup>-2000 Access System
- Lucent **SLC** Series 5 Carrier System
- Lucent **AnyMedia**<sup>®</sup> Access System
- Fiber Multiplexers
- DDM-Plus extension shelves
- Other vendors' Digital Loop Carrier equipment.

These cabinets can also be fitted with other telephony equipment not presently addressed in this document.

## **Features**

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The cabinet design meets all functional and performance requirements of **Bellcore** GR-487-CORE and includes several attractive features such as:

- Side access splicing
  - Eases installation by separating splicing from the electronics
  - Provides more splicing area
- Cabinet designed for slide-in placement
- Separate under-cabinet battery compartment
  - Keeps battery temperatures lower for longer battery life
  - Does not occupy valuable equipment space
- Patented enhanced cooling system
  - Allows greater equipment heat dissipation for more equipment or higher traffic rates
  - Eliminates possibility of hydrogen accumulation in battery compartment
  - Cools batteries
- Extended battery life
  - By drawing cooler ambient air through battery compartment, battery life is extended
- Bulk power system
  - Compactness maximizes available equipment space.

### **Construction and Finish**

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The 82-type cabinet's features are:

- Rugged heavy-gauge aluminum construction
- Weather, fire, vandal, and corrosion-resistant
- Durable baked on polyester powder paint in an ultra-light gray color
- High-gloss finish to minimize accumulation of soot
- Aesthetically pleasing to enhance public acceptance
- Security
  - All doors can be secured using a padlock
  - Special hex key used to open all doors.

### **Weight**

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The 82-type cabinet's approximate shipping weights are show in Table 1-A.

**Table 1-A. Cabinet Shipping Weights**

Cabinet	Shipping Weight*
82A	1200 lbs.
82D	1650 lbs.
82G	2100 lbs.

\* Weights do not include any equipment plug-ins.

## Dimensions

The overall dimensions of the 82A, 82D, and 82G are shown in Figures 1-1, 1-2, and 1-3, respectively.

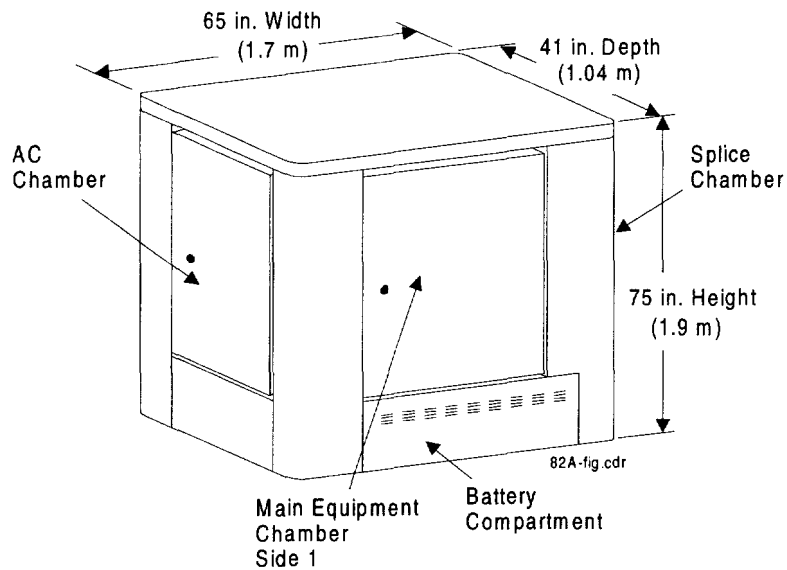


Figure 1-1. 82A Cabinet Dimensions and Structure

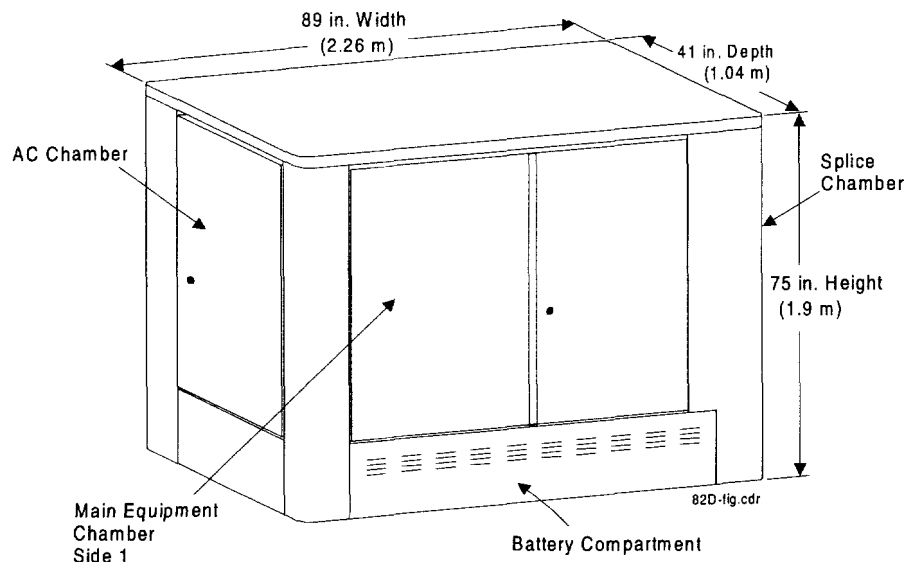


Figure 1-2. 82D Cabinet Dimensions and Structure

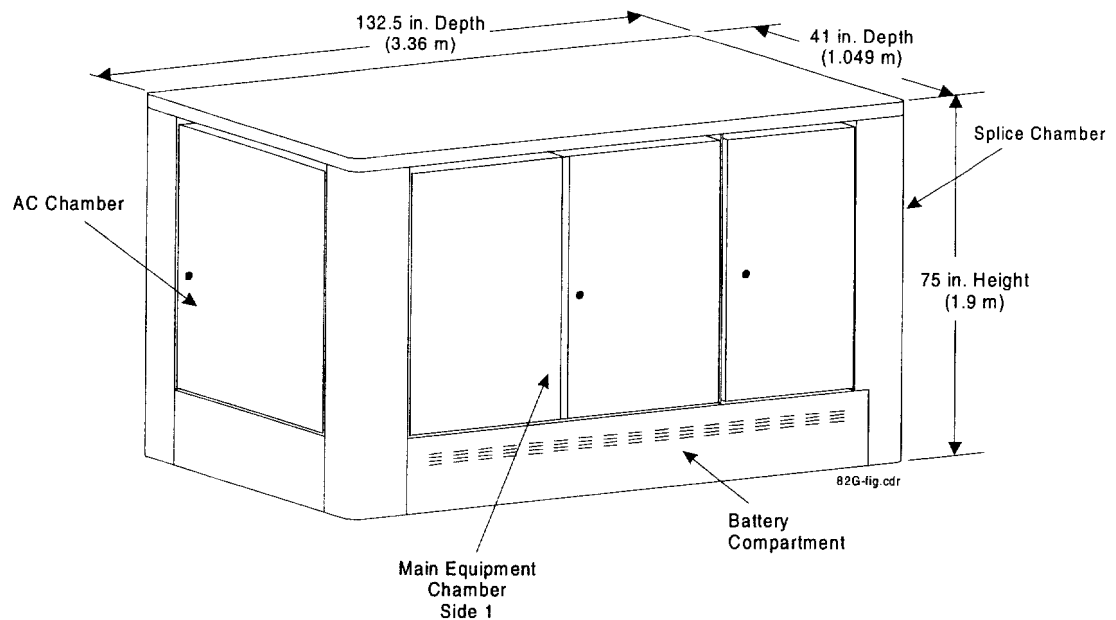


Figure 1-3. 82G Cabinet Dimensions and Structure

### Compartments

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Each of the cabinets is divided into four compartments (Figure 1-4):

- Upper **Electronics compartment**
- Lower **Battery compartment**
- Side (end) access **Splice compartment**
- Side (end) access **AC compartment**.

The upper **Electronics Compartment** houses the Bulk Power System, and all of the active electronic gear. The **Battery Compartment** is below the equipment area and is designed to accommodate various types of batteries for back-up power. The **Splice Compartment** houses the splice between the outside plant and the cabinet cabling as well as the protectors for all copper pairs. The protectors are housed on the sides of the splicing chamber. The **AC Compartment** houses the AC panel box, auxiliary generator inlet (if equipped), the DC distribution (Fuse and Alarm Panel), the Digital Signal Cross-Connect (DSX) panels, and the Fiber Splice Shelf.



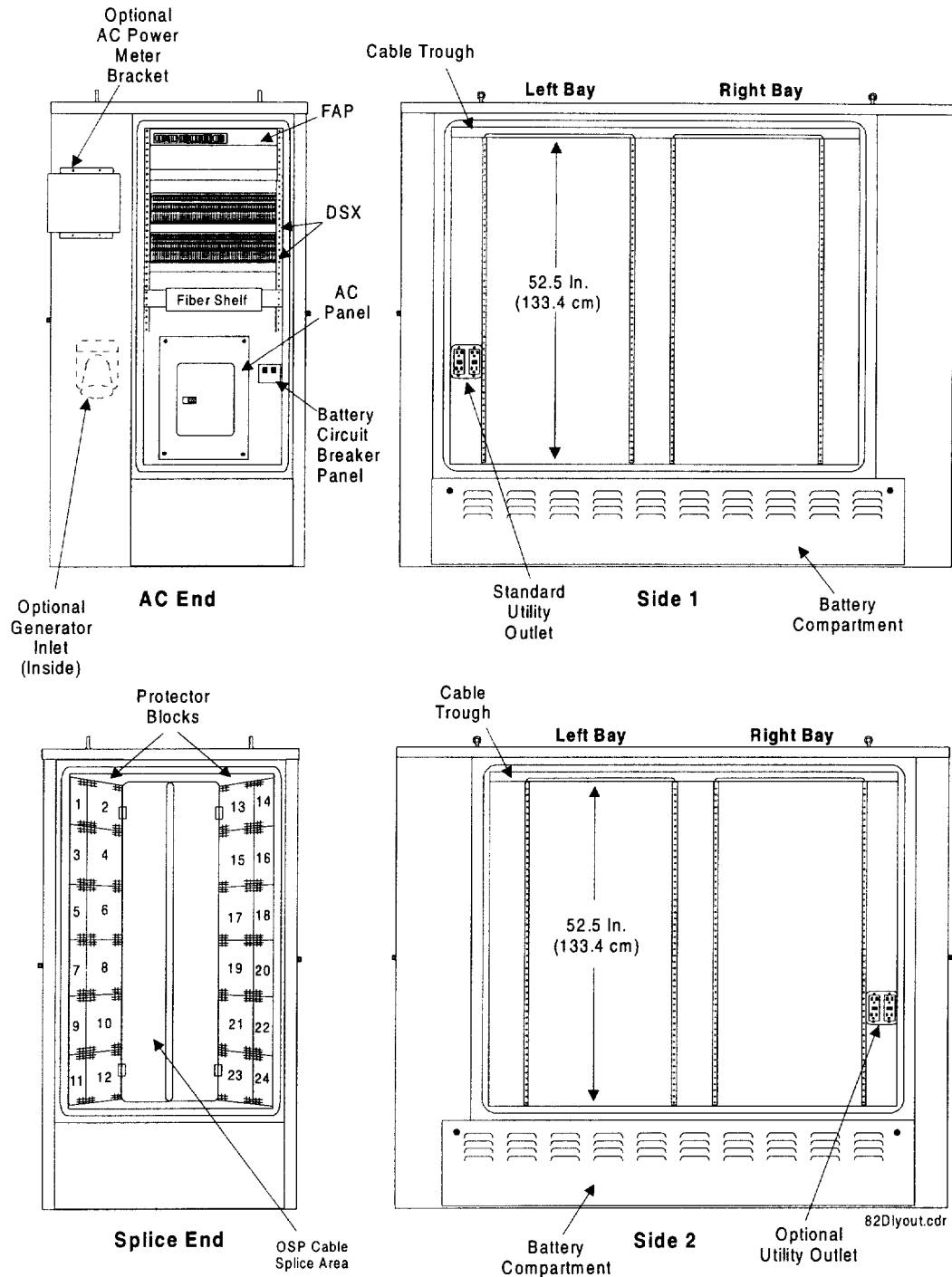


Figure 1-4. 82D Cabinet Layout

### Electronics Compartment

The 82A, 82D, and 82G cabinets have a two sided electronics compartment consisting of one, two, and three bays per side respectively. Table 1-B lists the number of bays per cabinet with rack dimensions. Access to the electronics compartment is through the main doors of the cabinets on Side 1 and 2 (Figures 1-1 through 1-3) which are opened using a special hex key (Comcode 846 244 168).

**Table 1-B. Equipment Space**

<b>Cabinet</b>	<b>Total No. of Bays</b>	<b>Rack Height per Bay</b>	<b>Standard Equipment Width</b>
82A	2	52.5 in.	23 in.
82D	4	52.5 in.	23 in.
82G	6	52.5 in.	23 in.

Also located within this compartment is the optional center mounted enhanced cooling system that enables the enclosure to dissipate the greater thermal load of high line density equipment or high traffic rate applications.

Half of the bays in each cabinet are accessible from Side 1 and the other half from Side 2 of the cabinet. The cabinets' sides are distinguished by the designations "Side 1" and "Side 2". Side 1 of each cabinet is identified as the side containing the Cabinet Power System (CPS).

When facing Side 1, the AC end is to the left and the splice end is to the right side of each cabinet. Telephony cables enter on one side (splice) while power cables enter on the other.

Figure 1-4 shows a typical cabinet layout (82D cabinet shown). The cabinets' standard equipment layouts are shown in Section 4.

## Splice Compartment

The side accessed splice compartment of each cabinet contains:

- Four cable entrance ports
- 307-type protector blocks
- Optional T1 cross-connect panel (*Megalink*)
- Main ground bus for the cabinet
- A separate area where splicing of the outside plant (OSP) cables to the cabinet cables occurs
- Space for containing the splice of the cabinet cabling to the outside plant cables.

Rubber cable boots are used to seal the outside plant cables to the entrance ports in the base of the splice chamber. The grounding of the outside plant cable shields to the cabinet ground bus occurs here.

A feature of the splice chamber on this line of cabinets is the ability to remove the lower gasket rail and the lower kick panel on the splice end of the cabinet. This allows the cabinet to be slid into position over prestubbed cables in the concrete mounting pad, avoiding the need to thread the cables through the entrance ports as the cabinet is lowered.

## AC Compartment

The side accessed AC compartment is also a separate area containing only non-heat-generating apparatus such as:

- AC panel box
- Optional auxiliary generator inlet
- Fuse and alarm panel
- Battery circuit breaker panel
- Digital Signal Cross-Connect (DSX) panels
- Fiber splice shelf.

AC service to the cabinet enters through the base of the AC compartment and is fed up to the *UL*<sup>\*</sup> listed AC panel via conduit. The fuse and alarm panel provides an alarm interface, fusing, and -48 V DC power and ringing distribution for the electronics equipment. An optional bracket is available for mounting an AC Power Meter to the outside of the AC end of the cabinet.

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<sup>\*</sup> Registered trademark of Underwriters Laboratories, Inc.

### Battery Compartment

The battery compartment of the 82-type cabinets houses

- Multiple 48 V DC strings of batteries for backup power
- Thermostatically controlled, AC powered battery heaters that protect the batteries from reduced capacity due to cold temperatures
- Connections for four battery temperature probes for monitoring battery temperature.

Table 1-C lists the maximum number of Lucent battery strings per 82-type cabinet.

Table 1-C. Cabinet Battery Capacity

Cabinet	Max. No. of Lucent 12IR125 Battery Strings	Battery Area Per Cabinet Side Dimensions (Inches)
82A	3	10.9 in. (H) x 17.6 in. (D) x 44.8 in. (W)
82D	4	10.9 in. (H) x 17.6 in. (D) x 65.4 in. (W)
82G	6	10.9 in. (H) x 17.6 in. (D) x 102.0 in. (W)

Each battery string is protected via a circuit breaker (located in the AC compartment) which also serves as a disconnect point for battery servicing.

### Security

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The electronics, splice, and AC compartment doors are accessed using the special hex key and can all be padlocked, if required. The battery doors, which cannot be padlocked, can only be opened by first opening the electronics compartment doors.

## **Environmental Control**

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### **Cooling System**

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The 82-type cabinets have been designed with new enhanced cooling features. The cabinets use a patented enhanced cooling system which includes:

- 6-type fan units
- Door ducts
- Center-mounted heat exchanger(s).

No outside air is introduced into the electronics portion of the cabinet for cooling purposes.

### **6-Type Bay Fan Unit**

A fan unit is mounted at the top of each bay containing electronic equipment such that it circulates air through the equipment to minimize critical component temperatures. The motors of the 6-type fan units remain on at all times, which improves the life of the electronics by minimizing stress due to thermal cycling. This ensures good thermal coupling between the cabinet air and the circuit packs, preventing the occurrence of hot spots. Moving the heat from the equipment to the cabinet air allows the cabinet to dissipate it to the outside environment.

In cabinets equipped with heat exchangers, the bay fans pull internal cabinet air upwards through the electronic equipment and exhaust the air from both the front and rear of the fan tray. The air exits the front of the fan into the top of the door duct, travels down the door duct, and exits at the bottom of the door. The air exiting the rear of the unit works in conjunction with the center-mounted heat exchangers. The air travels down through the outer inside air plenum of the heat exchanger and exhausts it at the bottom of the bay of equipment. The cooled air exiting at the bottom of the door duct and heat exchanger re-enters the equipment stack at the bottom of the bay.

In cabinets without heat exchangers, the bay fans exhaust air only into the door ducts.

## Heat Exchangers

Two types of heat exchangers are offered in the 82-type cabinets in addition to the base cabinet without a heat exchanger (HX). This provides multiple levels of cooling to match the needs of the type and quantity of equipment placed in the cabinet. The two HX types are:

- Hi-Performance HX & Battery Cooling
  - Extruded aluminum counter-flow design
  - Two environmentally protected fans per HX
  - Provides battery cooling using ambient air for extend battery life.
- Standard HX & Battery Cooling
  - Formed aluminum duct design
  - Two environmentally protected fans per HX
  - Provides battery cooling using ambient air for extend battery life.

The heat exchangers are positioned directly between each back-to-back bay of equipment. At the top of each hi-performance and standard heat exchanger, there are two environmentally protected fans.

The fans draw outside air from the battery door panels, through the batteries in the battery area, up through the center of the heat exchanger, and exhaust the air through vents located above the equipment area doors. Equipment heat is brought into the heat exchanger for cooling by the bay fans mounted atop each bay of equipment.

The heat exchanger fans are designed to operate continuously, provided the outside air temperature is above 37°F ±5°F.

## Battery Heating and Cooling

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### Battery Heaters

The optional battery heaters are located beneath the plate on which the batteries rest. They are designed to prevent the loss of battery reserve capacity that occurs when batteries are exposed to cold temperatures. There is a separate heater pad on each side of the cabinet, each with its own thermostat for control. The thermostats are set to operate the heater pad when it senses battery temperatures below 32°F ±5°F and shut them off when it senses above 50°F ±5°F.

### Battery Cooling

Battery cooling is provided by the hi-performance and standard heat exchanger options. Outside air, drawn past the batteries by the heat exchanger fans, reduces the heating of the batteries that otherwise occurs as a result of solar heating of the battery compartment doors, by the equipment heat in the cabinet, and self-heating due to charging.

This resulting reduction in battery temperature extends the life of batteries. More details on battery life improvement are given in Chapter 4 of this document.